

# Nothing to Fear but a Lack of Fear: Climate Change and the Fear Deficit

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Climate change is an almost perfect example of what economists call a “free rider problem.” Everyone would gain if everyone made relatively minor sacrifices. But the benefits of any one individual’s sacrifices are spread over millions of individuals, including those in future generations. No one is motivated to sacrifice and everyone suffers. Nations also fall into this trap if acting separately. End of story.



Yet, the explanation for our collective paralysis toward climate change is not quite so simple. In times of war, playing on patriotism, fear and hatred, nations have managed to band together and elicit from citizens and soldiers sacrifices far more profound than those that would be required to reverse climate change. Now, humanity faces a threat comparable to that of hostile human enemies, but, so far, nations have failed to exact even the most modest sacrifices from citizens. Most of us care profoundly about our children, and even our children’s children; why are we so passive in the face of a problem that poses such a dire threat to current and future generations?

While insights from economics go far toward ex-

plaining the failure of coordination between nations, psychology is needed to make sense of the tepid demands from citizens to even try. In this essay, we discuss some of the psychological factors that have prevented the emergence of a groundswell of support for taking action on climate change. Climate change, we show, is not only a perfect example of a free-rider problem, but also of a threat that is unlikely to garner the level of attention it warrants.

## Human psychology and the ‘fear deficit’

The root of our collective complacency when it comes to climate change lies in our failure to experience a level of fear that is commensurate with the severity of the problem. When most people think about the negative consequences of emotions, they are apt to think of cases of excessive emotion – road rage, panic, immobilizing depression. Yet many, if not most, of the problems currently facing humanity stem from a deficit rather than excess of emotion. Consider, for example, the two stock market and housing bubbles and crashes that wreaked havoc on world economies in recent decades. In newspaper articles with headlines such as “Fear Again Grips Stock Investors,” media accounts have commonly attributed these events to a sudden, self-fulfilling, spike in fear. Yet a more thoughtful analysis could easily result in the opposite conclusion. While an excess of fear may well have deflated the two bubbles, it was an insufficiency of fear that allowed prices to get out of line with fundamentals in the first place. With climate change, a similar deficit of fear promises even more dire consequences.

Why are we experiencing so little fear in the face of an imminent (in the time-frame of human history) threat to our collective existence? The answer to this question is aided by a rudimentary understanding of the psychology of emotions.

While most people think of emotions as feeling states, psychologists are converging on a rather different understanding of emotions -- as all-encompassing ‘programs’ of our minds and bodies that prepared us to respond to recurrent situations of adaptive significance in our evolutionary past, such as fighting, escaping predators and reproducing. Fear, according to this account of emotion, is an evolved response that fundamentally transforms us as people to deal with threatening situations that we encountered repeatedly in our evolutionary past. Fear activates specialized systems in our brains. Beyond the subjective feeling of fear, our hearing and sight become more acute; we become attuned to threatening things we otherwise would not have noticed, our memory sharpens, and there are myriad physiological

changes like gastric effects and adrenalin spikes.

Although emotions, including fear, serve critical functions in human life, the emotion systems we are carrying around evolved in a very different environment than that of the present. Our appetitive system evolved long before high fat foods became virtually free, our sexual programming before the advent of internet pornography, and our pleasure-seeking system before the development of crystal meth. Likewise, our fear system evolved at a time when most of the people who mattered for our survival were in our immediate proximity and most of the hazards that threatened our survival were relatively immediate, such as predators, enemies and sudden changes in the natural environment. Our fear system is not well equipped to dealing with the most significant threats of the modern age that, like climate change, develop gradually and affect people we will never meet.

Our fear system is adaptive. Hold any problem constant for some period of time, and fear subsides, even if the objective severity of the problem remains constant or even grows gradually. Our fear system is designed to motivate us to take action to eliminate imminent risks, but when risks such as climate change remain constant (or change imperceptibly) over time, our fear system takes it as a signal that the persistence of fear serves no function.

Our fear system is largely oriented to the present. In part because our emotion system is so much more responsive to immediate than delayed outcomes, we 'discount' the future, which helps to explain why so many of us fail to diet or to save adequately for retirement. Climate change entails a trade-off between immediate sacrifices and long-term harms of exactly the type that humans often have difficulty with. Democratic governments may be in an even worse position than individuals. The always-upcoming elections might discourage them from putting strong effort into long-term solutions.

Our fear system is also responsive to outcomes that are tangible and ill equipped to deal with situations in which the consequences of our behavior are imperceptible. We eat one potato chip (and then one more and one more) because any one potato chip has no impact on our weight, and we smoke the next cigarette because it is unlikely to be the one that kills us. This 'drop-in-the-bucket effect' comes into play in myriad ways when it comes to climate change. What difference would it make to turn the A/C down a few degrees? Of course drops in the bucket add up, and eventually the bucket overflows.

Adaptation, time discounting and the drop-in-the-bucket effect are all features of our fear system that squelch what might otherwise be a healthy fear-response to climate change. Moreover, each of these



tendencies interacts in a pernicious fashion with another psychological tendency: our highly developed ability to see what we want to see and believe what we want to believe. We are powerfully motivated (by time discounting) to not make immediate sacrifices for climate change, and our brains are remarkably adept at giving us various rationalizations for (not) doing so. "Climategate," for example, provided welcome grist for skepticism by a public who didn't want to believe in global warming in the first place. Since Climategate, belief that climate change is happening and is manmade has declined substantially in Britain, Germany and the United States. The fact that multiple independent reviews failed to turn up evidence of malice or fraud, or that ongoing research has not shaken scientists' belief in the reality of the problem, has had comparatively little impact.

### **What can be done?**

In a recent New Yorker article about Saul Griffith, an ecologically-oriented inventor, David Owen writes that "the world's most urgent environmental need, he has come to believe, is not for some miraculous-seeming scientific breakthrough but for a vast, unprecedented transformation of human behavior." Unfortunately, such a transformation is unlikely to occur. In the absence of such a transformation, policy makers must, therefore, work with people in all their psychological fallibility and complexity. As Rousseau famously commented, we need to "consider if, in political society, there can be any legitimate and sure principle of government, taking men as they are and laws as they might be."

Some behavioral economists have proposed 'nudges' to shift behavior in desired directions, and they have caught the ear of world leaders such as Barack Obama and David Cameron, both of whom count behavioral economists prominently among their advisors. While nudges are helpful, and propel behavior in desirable directions with minimal disruption of freedom of choice, they are unlikely to result in anything close to the changes in individual and firm behavior necessary to deal with the problem of climate change. For example,



giving people information about other people's electricity consumption, an idea that Cameron has endorsed enthusiastically, has by now been tested on a large-scale test, resulting in only a 3% reduction in electricity use. Although significant, this type of 'nudge' by itself is unlikely to make much of a dent in the problem of global warming.

To have a serious impact on the problem of climate change there is no way to escape the necessity for policies that either change prices (e.g., a carbon tax or cap and trade) or involve regulation (e.g., far more stringent café standards on automobile fuel efficiency as well as new standards for residential and commercial construction). But how likely is it that such severe measures will be implemented, given the psychological barriers just discussed?

This is another important domain in which behavioral economics can play a constructive role. A carbon tax, or cap and trade scheme, will result not only in dramatic rise in the price of energy-intensive activities and hence, hopefully, a reduction in energy use, but will also generate very substantial revenue streams. These revenue streams hold the potential, such as it exists, to make the medicine of price changes go down somewhat more smoothly. Revenue streams could be used to reduce other prices (ideally those associated with low emission activities) – or even to offer tax abatements. Behavioral economists should use their integrated understanding of economics and psychology to design ways of returning the revenue streams to people in ways that make taxes and regulations more palatable.

In fact, the same psychological features that weigh against constructive action to deal with climate change can be exploited by policy-makers to increase the palatability of substantive interventions. If people discount the future and ignore drops in the bucket, then use capital markets to deliver the dividend from future carbon tax revenues in a substantial lump sum, up front.

If people adapt to ongoing situations, it can be predicted that, perhaps after an initial uproar, they will adapt to a change in relative prices that bring prices into line with real costs, including environmental externalities.

Humanity stands immobilized at the brink of disaster because climate change poses a perfect storm of not only economic but also psychological impediments to action. We may eventually experience a level of fear that is commensurate with the severity of the problem, but by that time it will probably be far too late to avoid catastrophe. In the absence of fear, citizens of nations are unlikely to accept measures that entail significant personal sacrifice. We need a skillful mixture of economics and psychology to devise fiscal and regulatory interventions that will change behavior and be widely accepted.

## References

- 1 Weber, E. U. (2006). Experience-based and description-based perceptions of long-term risk: Why global warming does not scare us (yet). *Climatic Change*, 70, 103-120.
- Loewenstein, G., & Brest, P. (2009, July 12). Sunday forum: In defense of fear. *Pittsburgh Post-Gazette*. Retrieved from <http://www.post-gazette.com/>.
- Loewenstein, G. (2010). Insufficient emotion: Soul-searching by a former inductor of strong emotions. *Emotion Review* (online at <http://emr.sagepub.com/cgi/rapidpdf/1754073910362598v1>).
- Loewenstein, G. (2007). Defining Affect (Commentary on Klaus Scherer's "What is an Emotion?"). *Social Science Information*, 46, 405-410.
- Cosmides, L., & Tooby, J. (2004). Evolutionary Psychology and the Emotions. In *Handbook of Emotions*, 2nd Edition M. Lewis & J. M. Haviland-Jones, Editors. NY: Guilford.
- McClure, S.M., Laibson, D.I., Loewenstein, G. & Cohen, J.D. (2004). Separate neural systems value immediate and delayed monetary rewards. *Science*, 304, 503-507.
- Rick, S. & Loewenstein, G. (2008). Intangibility in intertemporal choice. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 363, 3813-3824.
- Loewenstein, G. (2006). The pleasures and pains of information. *Science*, 312, 704-706.
- Rosenthal, Elisabeth, "Climate fears turn to doubts among Britons." *New York Times*, May 24, 2010, Page A1.
- Thaler, R. H., & Sunstein, C. R. (2008). *Nudge: Improving decisions on health, wealth, and happiness*. New Haven, CT: Yale University Press. [http://www.ted.com/talks/david\\_cameron.html](http://www.ted.com/talks/david_cameron.html).
- Ayres, I., Raseman, S., & Shih, A. (2009). Evidence from two large field experiments that peer comparison feedback can reduce residential energy usage (NBER Working Paper 15386). Cambridge, MA: National Bureau of Economic Research.
- Alcott, H. (2009). "Social Norms and Energy Conservation." Working Paper, MIT.
- Loewenstein, G., John, L.K., & Volpp, K.G. (forthcoming). Using Decision Errors to Help People Help Themselves. In Eldar Shafir (Ed.), *Behavioral Foundations of Policy*. New York: Russell Sage Foundation Press.
- Loewenstein, G., Brennan, T., & Volpp, K.G. (2007). Asymmetric paternalism to improve health behaviors. *Journal of the American Medical Association*, 298(20), 2415-2417.